Distributed Command/Control Impacts on NAS Operations, Phase II

Completed Technology Project (2005 - 2007)

Project Introduction

In an effort to cope with air traffic demand growths and changing demand patterns, FAA, NASA, and industry have developed a number of simulation tools to model future concepts of air traffic management. Among these is the Systems Analysis Branch (SAB) simulation environment of NASA Langley. The current tools would greatly benefit from the portrayal of the daily preemptive Command and Control (C&C) activities performed by FAA and air carrier traffic managers. These actions significantly influence daily operations and overall NAS efficiency. Development of new operational concepts and evaluation of proposed changes requires simulation and modeling capabilities that include C&C effects. This understanding is crucial for the evaluation of current or proposed operations. Metron Aviation uses its extensive experience with and research of C&C to implement a model of NAS-wide ATM (C&C) actions and to integrate the resulting module into NASA Langley's SAB simulation environment. The final product adds realism to future aircraft movement simulations performed by NASA Langley and admits exploration of new concepts that involve air traffic flow management.

Anticipated Benefits

Potential NASA Commercial Applications: Estimates of ATM costs due to delays range from hundreds of millions to billions of dollars per year. Several research activities being pursued to meet the increasing demands in air travel promise to be costly and laborious to implement, and the difficulty of adequately assessing the anticipated impacts creates significant risk for operators and users of the NAS. Development of simulation capabilities and benefit assessment methods that include the effects of C&C creates significant commercial demand for accurate and robust C&C modeling capabilities.

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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Langley Research Center (LaRC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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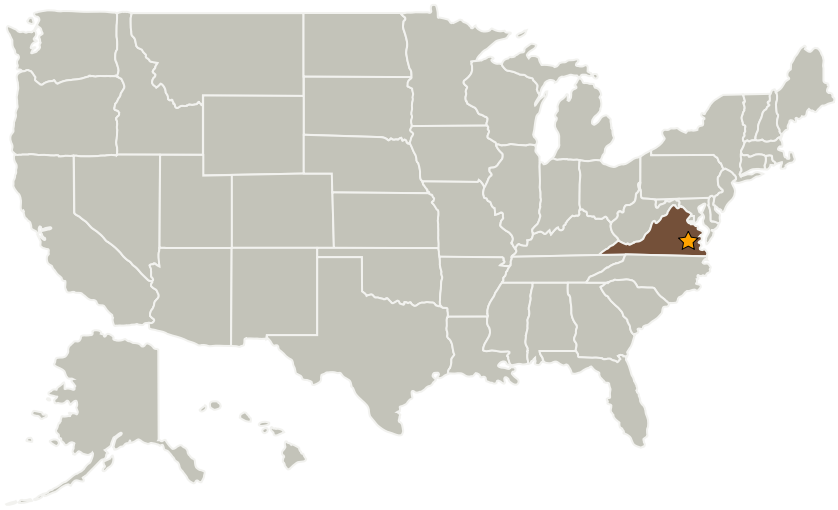
Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
★Langley Research Center(LaRC)	Lead Organization	NASA Center	Hampton, Virginia
Metron Aviation, Inc.	Supporting Organization	Industry	Dulles, Virginia

Primary U.S. Work Locations
Virginia

Project Management

Program Director:
Jason L Kessler

Program Manager:
Carlos Torrez

Principal Investigator:
Terence R Thompson

Technology Areas

Primary:

- TX16 Air Traffic Management and Range Tracking Systems
  - TX16.3 Traffic Management Concepts